TABLE 11-continued

Honeycomb catalyst	Powder catalyst A	Powder catalyst B	Mode of carrying	Mixture weight ratio	Ammonia decomposition (%) 300° C.	Ammonia decomposition (%) 400° C.	Nox (NO, NO_2, N_2O) production (%) 300° C.	Nox (NO, NO_2, N_2O) production (%) 400° C.	SO_2 oxidation (%) 400° C.	SO_2 oxidation (%) 400° C.
134	33	—	Upper layer B Lower layer C	—	98	99	10	20	2	2
135	—	30	Upper layer B Lower layer C	—	10	20	0	0	0	0

What is claimed is:

1. A method of decomposing ammonia in a gas with an ammonia decomposition catalyst comprising a crystalline silicate carrier of the formula

$$(1\pm0.8)R_2O.[aM_2O_3.bAl_2O_3].cMeO.ySiO_2,$$

wherein R denotes an alkaline metal ion and/or hydrogen ion, M denotes at least one element selected from the group consisting of VIII group elements, rare earth elements, titanium, vanadium, chromium, niobium, antimony, and gallium, Me denotes an alkaline earth metal, wherein a≧0, b≧0, c≧0 a+b=1, y/c>12 and y>12,and iridium as an active metal, wherein the gas containing ammonia is exposed to said catalyst, thus decomposing and removing the ammonia.

2. A method of decomposing ammonia in a gas with a composition ammonia decomposition catalyst comprising a first catalyst comprising as a carrier a crystalline silicate which is represented by the formula in the molar ratio as dehydrated:

$$(1\pm0.8)R_2O.[aM_2O_3.bM'O.cAl_2O_{3}]_{.ySiO_2},$$

wherein R denotes an alkaline metal ion and/or hydrogen ion, M denotes at least one element selected from the group consisting of VIII group elements, rare earth elements, titanium, vanadium, chromium, niobium, antimony, and gallium M' denotes at least one element selected from the group consisting of magnesium, calcium, strontium, and barium, wherein a≧0, 20>b≧0, a+c=1, and 3000>y>11, and iridium as an active metal; and a second catalyst comprising at least one element selected from the group consisting of titanium, vanadium, tungsten, and molybdenum, wherein the gas containing ammonia is exposed to said decomposition catalyst, thus decomposing and removing the ammonia.

3. A method of decomposing ammonia according to claim 2, wherein the first catalyst comprises a crystalline silicate carrier which is represented by the formula, as dehydrated;

$$(1\pm0.8)R_2O.[aM_2O_3.bAl_2O_3].ySiO_2,$$

wherein R denotes an alkaline metal ion and/or hydrogen ion, M denotes at least one element selected from the group consisting of VIII group elements. T_1O_2 is a carrier for and titanium and vanadium is the second catalyst.

4. A method of decomposing ammonia in a gas with a layered ammonia decomposition catalyst comprising: a first catalyst comprising as a carrier a crystalline silicate which is represented by a following formula in terms of molar ratio as dehydrated:

$$(1\pm0.8)R_2O.[aM_2O_3.bM'O.cAl_2O_3].ySiO_2,$$

wherein R denotes at least one element selected from the group consisting of magnesium, calcium, strontium, and barium, a≧0, 20>b≧0, a+c=1, and 3000>y>11, and as an active metal at least one noble metal selected from the group consisting of platinum, palladium, rhodium, and ruthenium; and a second catalyst comprising at least one element selected from the group consisting of titanium, vanadium, tungsten, and molybdenum; wherein the second catalyst forms an overlayer covering the first catalyst, wherein the gas containing ammonia is exposed to said decomposition catalyst, thus decomposing and removing the ammonia.

5. A method of decomposing ammonia in a gas with an ammonia decomposition catalyst comprising a carrier of at least one porous material selected from the group consisting of γ-Al_2O_3, θ-Al_2O_3, ZrO_2, TiO_2, $TiO_2.ZrO_2$, $SiO_2.Al_2O_3$, $Al_2O_3.TiO_2$, SO_4/ZrO_2, $SO_4/ZrO_2.TiO_2$, zeolites Y, zeolites X, zeolites A, mordenites, and silicalites, and iridium as an active metal, wherein the gas containing ammonia is exposed to said catalyst, thus decomposing and removing the ammonia.

6. A method of decomposing ammonia in a gas with a composite ammonia decomposition catalyst comprising a first catalyst comprising as a carrier at least one porous material selected from the group consisting of γ-Al_2O_3, θ-Al_2O_3, ZrO_2, TiO_2, $TiO_2.ZrO_2$, $SiO_2.Al_2O_3$, $Al_2O_3.TiO_2$, SO_4/ZrO_2, $SO_4/ZrO_2.TiO_2$, zeolites X, zeolites A, mordenites, and iridium as an active metal; and a second catalyst comprising at least one element selected from the group consisting of titanium, vanadium, tungsten, and molybdenum, wherein the gas containing ammonia is exposed to said decomposition catalyst, thus decomposing and removing the ammonia.

7. A method of decomposing ammonia in a gas with a layered ammonia decomposition catalyst comprising: a first catalyst comprising as a carrier at least one porous material selected from the group consisting of γ-Al_2O_3, θ-Al_2O_3, ZrO_2, TiO_2, $TiO_2.ZrO_2$, $SiO_2.Al_2O_3$, $Al_2O_3.TiO_2$, SO_4/ZrO_2, $SO_4/ZrO_2.TiO_2$, zeolites Y, zeolites X, zeolites A, mordenites, and silicalites, and as an active metal at least one noble metal selected from the group consisting of platinum, palladium, rhodium, and ruthenium; and a second catalyst comprising at least one element selected from the group consisting of titanium, vanadium, tungsten, and molybdenum; wherein the second catalyst forms an overlayer covering the first catalyst, wherein the gas containing ammonia is exposed to said decomposition catalyst, thus decomposing and removing the ammonia.

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